Beringian Research Notes

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Map of Beringia at the height of the last glaciation showing limits of glaciation and the location of archaeological sites of the late Ice Age.

Beringia

Beringia was named in 1937 by the Swedish botanist, Eric Hultén, who proposed the former existence of a land bridge where Bering Strait exists today. The strait, Bering sea, the land bridge, and Bering Island were named for Vitus Jonassen Bering, a Danish explorer who served as an officer in the Russian navy. In 1725, Peter the Great appointed Bering to explore the coast of Siberia. By sailing through the strait that bears his name, Bering proved for the first time that Asia and North America were not joined.

Hultén apparently thought of Beringia as coming into existence only when sea level was low enough to cause the floors of Bering Sea and Chukchi Sea to be exposed and form the land bridge. Today we think of Beringia in a much broader sense. It is a landmass that remained generally ice free even during continental glaciations, and it stretches from the Kolyma River in Siberia to the Mackenzie River in Canada, a distance of 3200 km. It includes portions of three modern nations (Russia, the United States of America, and Canada) and straddles such great divisions as the continents of Asia and North America, indeed the eastern and western hemispheres.

We tend to think it "normal" that the seas should occupy the center of Beringia and intriguing or unusual that the floors of those seas have been exposed as dry land in the past. In fact, the Bering Land Bridge has been dry land more often than not for the past two million years or more. We are living in unusual times, during an interglacial period that has drowned the center of Beringia beneath the seas. The Bering Land Bridge originated at least 70 million years ago (mya) and was a dry land route for the movements of plants and animals on many occasions. When the land bridge is submerged, Beringia forms a link between the Pacific and Arctic Oceans, allowing marine molluscs and other life forms to exchange between the ocean basins. Alternate emergence and submergence of the Bering Land Bridge influences oceanic currents and temperatures as well as atmospheric conditions that modify the climate of the Northern Hemisphere.

Many important migrations of large animals have taken place during the 70 million year history of the Bering Land Bridge. For example, two families of elephant-like animals (mastodonts and gomphotheres) spread from their African homeland across much of Eurasia and extended their range into the Americas around 15 mya. Various members of the deer family reached North America even earlier, around 25 mya. Migrations in the opposite direction introduced horses and camels, by different routes and at different times, from their North American homeland to Eurasia. These movements were critical to the formation of modern animal populations. Consider, for example, the fact that camels and horses became extinct in North America by the end of the last Ice Age. The survival of these lineages today is a result of their ancient dispersals to Eurasia.

During the past three million years the Northern Hemisphere has experienced repeated, prolonged episodes of continental glaciation. In many cases, the entrapment of so much water on the continents has caused world-wide sea level to decline enough to expose the Bering Land Bridge. Studies of small rodents, such as lemmings and voles, reveal many episodes of dispersal across Beringia. New families of large mammals, including true elephants (mammoths) and bovids (bison, sheep and muskoxen) also reached North America by this route. In fact, one study in the northern Yukon (part of eastern Beringia) estimated that of 62 species of land mammals recovered as fossils, 75% were derived from Eurasia and the remainder from southern North America. Clearly the Bering Land Bridge has continued to play an important role as a migration route between the hemispheres. In the course of the last five million years, each of the three North American Land Mammal Ages, the Blancan, the Irvingtonian, and the Rancholabrean, can "...be seen as inaugurated by an intense phase of migrations across the Bering Bridge" (Kurtén and Anderson 1980: 96).

The role of Beringia as a migration route should not be overemphasized, however: "A subcontinent in itself, Beringia probably played an important role as an evolutionary center for arctic mammals, commensurate with that of tropical North America for the southern fauna" (Kurtén and Anderson 1980: 92). For example, the

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caribou first appears in Beringia, and other species probably evolved in the region. This role is not yet as well understood as the role of migratory pathway, but it is already clear that fossil assemblages in far western Beringia (the Kolyma lowland) have more in common with those in far eastern Beringia (Old Crow Basin) than they have with assemblages in more southerly latitudes. This is to be expected in view of the many special requirements for sustaining life in northern latitudes. Whether by migration or by evolution, Beringia has influenced many life forms other than mammals, including, for example, plant and invertebrate communities, the latter ranging from insects to the parasitic worms carried by mammals.

Beringia has played a key role in the evolution and dispersal of our own species. Like the elephants, our lineage arose in Africa and long ago spread across areas of Eurasia that offered moderate climates. By 60,000 years ago, and perhaps earlier, some people embarked upon one of the most remarkable achievements of humankind: they learned how to live in the far north. Using artifacts made by hand from stone, bone, sinew, wood, fiber, and moss, they invented secure dwellings and tailored skin clothing. They developed expert control of fire, including the use of alternative fuels such as animal dung, finely broken bone and fat or oil in areas lacking woody plants. They learned to travel over snow and ice, and they may have invented watercraft with which to cross dangerously cold rivers. They also learned to cope with long hours of winter darkness.

These ancient people were skilled in many of the arts and sciences we pursue today. They possessed profound biological knowledge - the nutritional and medicinal properties of many plants and the habits and anatomy of many animals. They were experts at finding geological deposits that contained stone suitable for flaking into tools and grinding into pigments. They were probably great storytellers who entertained and educated themselves by passing on oral histories and knowledge from one generation to another.

We do not yet know when people first reached Beringia and settled there permanently, but it was the emergence of the Bering Land Bridge that enabled them to reach the North American continent. The earliest widespread, indisputable evidence of human occupation is dated to the closing millennia of the last glacial cycle, as early as 14,000 years ago in western Beringia and 12,000 years in the eastern sector. Evidence from the Bluefish Caves, in northern Yukon, suggests that people may have lived there during the height of the last glaciation, around 24,000 years ago, but no other human habitation sites of this age have yet been discovered elsewhere in Beringia. Hints of even earlier human presence, back to 40,000 years ago, have been reported from Old Crow Basin, also in northern Yukon, but these hints depend upon interpretation of redeposited mammoth bones rather than undisturbed archaeological deposits. Much more archaeological work will be needed to reveal a more complete picture of human occupation in Beringia.

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Until recently, it was believed that the last period of Bering Land Bridge emergence came to an end around 14,000 years ago and that people must surely have crossed the land bridge by that time. Recent studies of dated core samples from the floors of the Bering and Chukchi Seas suggest that final inundation of the land bridge did not occur until around 11,000 years ago. Support for this later date can be found in long sequences of dated bowhead whales and marine molluses that first reach the Beaufort Sea from the Pacific shortly after this time. Hence the timing of exposure and inundation of the land bridge poses no constraint upon the initial colonization of eastern Beringia by people. It is up to archaeologists to discover the timing of this important event in the ancient history of Beringia.

Beringia exists today, not as a land bridge but as a seaway. Bering Strait is only 80 km wide, and a few people have made hazardous crossings of its shifting sea ice. Of more importance during the past 11,000 years has been the link between the Pacific and Arctic Oceans. If nature takes its normal course the land bridge will eventually rise again as glaciers advance across the continents and sea level is lowered. It is too soon to say whether that normal course of events will be diverted by the effects of global warming arising from the activities of our species.

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Additional Reading

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The Beringian Research Notes series presents vignettes of life in the Yukon during the last Ice Age.

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